Monitoring Study Group Meeting Minutes

March 14, 2006
Swanton Pacific Ranch, Davenport

The following people attended the MSG meeting: George Gentry (BOF Executive Officer, acting chair), Nadia Hamey (Big Creek Lumber Co.), John Munn (CDF), Dr. Brian Dietterick (Cal Poly SLO), Chris Keithley (CDF-FRAP), Gary Peterson (Salmonid Solutions), Richard Gienger (HWC/SSRC), Drew Perkins (CCRWQCB), Palma Risler (U.S. EPA), Kevin Faucher (CTM), Jodie Frediani (CRFM/Sierra Club), Steve Auten (Cal Poly SLO), Tom Spittler (CGS), Dave Hope (NCRWQCB), Dr. Cajun James (SPI), Dennis Hall (CDF), Chris Hipkin (Statewide Forestry Services), Russ White (Cal Poly SLO), and Pete Cafferata (CDF). **[Note: action items are shown in bold print]**.

We began the meeting with general monitoring-related announcements:

- The 5th National Monitoring Conference titled "Monitoring Networks: Connecting for Clean Water" will be held May 7-11, 2006 in San Jose. The sponsor is the National Water Quality Monitoring Council and more information can be found at: http://water.usgs.gov/wicp/acwi/monitoring/conference/2006/.
- The California Forest Soils Council (CFSC) Spring Meeting titled "Soil Quality for the Real World: do regulation and certification address the real issues?" will be held April 7, 2006 at UC Davis. Registration is $20.00; for more information, contact Denise Downie, USFS, Lake Tahoe, at dedownie@fs.fed.us.
- Tom Spittler reported that the BOF's Road Rules Committee is actively working on compiling the existing road rules into one new section and removing redundancies. Only a few items have been identified as missing from the existing rule requirements.
- Tom Spittler said that Michael Huyette of CGS is completing a literature review for sizing rock used for rock ford crossings. A draft product should be available by March 24th.
- Tom Spittler also announced that there will be a special symposium titled "Mass Wasting in Disrupted Watersheds" held in Durango, Colorado on May 3-5, 2006. The conference is sponsored by the Association of Environmental and Engineering Geologists. For more information, see: http://haneberg.com/watersheds/
- The BOF Forest Practice Committee will hold a meeting starting at noon on April 3, 2006 in Sacramento to address review of the Threatened and Impaired Watersheds Rule Package, which is set to expire at the end of 2006. The meeting will focus on the lists of relevant literature citations that are currently being compiled by NOAA Fisheries (with input from MSG participants) and by CH2M-Hill (for CFA). Additional literature citations can still be submitted by MSG participants to Pete Cafferata (pete.cafferata@fire.ca.gov)
- Gary Peterson announced that the 8th Federal Interagency Sedimentation Conference and the 3rd Federal Interagency Hydrologic Modeling Conference will be jointly held in Reno from April 2-6, 2006. For more information, see: http://www.jfic.org/.
- Gary Peterson also stated that a training class that provides an introduction to methods currently used by the USGS to sample suspended sediment concentrations in streams is available at: http://pubs.usgs.gov/sir/2005/5077/. The class is titled "Introduction to Suspended-Sediment Sampling" and was developed by K.M. Nolan, J.R. Gray, and G.D. Glysson. The course can be taken online or is available as a CD-ROM.
- Richard Gienger announced that the 9th Annual Coho Confab will take place in August in the Tomales Bay area. More information will be available shortly on both the Trees Foundation (http://www.treesfoundation.org/publications/topic-18) and Salmonid Restoration Federation (http://www.calsalmon.org/) websites.

MSG Strategic Plan Revision Discussion

Pete Cafferata provided background information regarding past MSG meeting discussions on possible approaches for revising the MSG Strategic Plan that was adopted by the BOF in January 2000. A new list of 8 specific goals was provided to the group and briefly summarized. In condensed form, these include: (1) coordinating monitoring efforts to avoid duplication, (2) providing guidance related to development of new monitoring programs, (3) providing an open forum to discuss monitoring results, (4) providing advice to the BOF and its technical advisory committees (5) providing a forum for coordinating support for instream monitoring projects, (6) providing advice regarding appropriate data analyses for past, present, and future monitoring programs, (7) providing information from monitoring projects to the BOF and other stakeholders on a regular basis, and (8) utilizing monitoring results in training programs.

George Gentry stated that the general consensus from past meeting discussions was that the MSG wants to retain the collegial atmosphere and is resistant to becoming a structured group. He asked the people present if the revised Strategic Plan goals in the handout have overlooked items, and if they should be prioritized in any way. He added that following input from this meeting, a revised Strategic Plan will be given to the BOF for their review. The Board is currently in the process of revising its own policy statement, and the revised MSG Strategic Plan dovetails well into this larger process.

Richard Gienger informed the group that the original task of the MSG was to develop a long-term monitoring program that would fulfill U.S. EPA requirements, leading to certification of the Forest Practice Rules as BMPs, as has occurred in numerous other states. He stated that the proposed revised MSG Strategic Plan does not incorporate this objective. Palma Risler stated that at this time, there is no ongoing process from the State and Regional Water Boards to certify the Forest Practice Rules (FPRs) as BMPs. She added that: (1) EPA has not heard from the SWRCB that they would like to have EPA review the FPRs for certification, and (2) EPA has not anticipated another rule review for BMP certification. Cajun James stated that SPI and the California forest industry still want to see the FPRs approved as BMPs, and that it is inappropriate that California is the only western state without EPA approval. She added that the MSG should include this as a goal in the revised MSG Strategic Plan. She also stated that the Strategic Plan should recognize that the instream monitoring projects being conducted are research projects—not just monitoring studies. Tom Spittler asserted that it is appropriate for the MSG to determine if the FPRs are functioning as BMPs through both research and monitoring, whether this leads to EPA certification or not. Dave Hope stated that monitoring has improved dramatically in the past five years, and added that Erosion Control Plans, which are required as part of the NCRWQCB's General WDR process, have been effective in reducing sediment yields. Cajun James stated that the Hillslope Monitoring Program showed that the FPRs are effective when properly implemented, but Richard Gienger countered that that program showed that there were still significant problems associated with watercourse crossings.

George Gentry closed this discussion by saying that the MSG should not just be about proving the FPRs are suitable to be certified as BMPs by EPA. Rather, he said the MSG should promote a broader process that incorporates an array of monitoring approaches for adaptive management—providing information about practices that

require improvement for water quality protection, and devising methodologies for detecting what practices are effective in protecting water quality. He added that he believes MSG could help the BOF by providing unbiased reviews of the literature for selected topics. One approach that Mr. Gentry has proposed to use for unbiased review of literature is denoted as the "systematic review process," which has been widely used in the medical profession (for information describing the process of creating systematic reviews, see: http://www.cochrane.org/resources/handbook/).
George Gentry concluded this agenda item by stating he expects to finalize the revised MSG Strategic Plan by the next MSG meeting. He asked that MSG participants send additional suggested changes to Pete Cafferata and/or himself prior to the next meeting.

Interagency Mitigation Monitoring Program (IMMP) Update

Pete Cafferata provided the group with a short update on the IMMP. Briefly, the IMMP is being developed to provide information regarding forestry-related practices designed to reduce impacts to water quality at sites where there is a high risk of impacts to water quality. For the pilot project, the IMMP will collect data on implementation and effectiveness of practices at locations that past monitoring has shown to be the most likely sources of impacts to water quality—watercourse crossings and road segments that drain to crossings. The IMMP pilot will test the effectiveness of using multi-agency teams composed of representatives from CDF, DFG, CGS, and the Regional Water Quality Control Boards (RWQCBs). It is anticipated that this team approach will provide a balance of interests for all the Review Team agencies and provide greater public confidence in the monitoring results. In addition, the team approach will promote information sharing and cooperative efforts within and among the agencies.

An MSG IMMP Subcommittee has held five meetings in 2005 and 2006 to develop the long-term program and the shorter term pilot project set to begin this summer. The pilot will utilize two teams, one headquartered in Santa Rosa and the other working out of Redding. CDF Monitoring Foresters Anthony Lukacic and Shane Cunningham will coordinate monitoring activities for the IMMP teams. **A general framework document describing the IMMP will be finalized shortly and the one page executive summary was provided to MSG participants for summary information on the program.**

The IMMP will utilize repeatable field protocols that are performance-based. A mixture of qualitative and simple quantitative approaches will be used. The pilot will test a set of specific Regional BMP Monitoring Program questions that have undergone intense field testing in 12 northeastern states and are endorsed by the U.S. EPA. We anticipate that 136 questions will be answered related to crossings and roads that drain to crossings, with data input into small, field portable computer devices (PDAs). CDF is working with its IT unit on purchasing PDAs and receiving support for the units. **Additionally, a California-specific set of questions that are similar in format to the Regional BMP Monitoring questions is being developed**. CDF, CGS, DFG, and the Regional Water Boards are in the process of developing lists of potential plans to use in the pilot project. The initial IMMP training session is scheduled for May 17th and 18th at the JDSF Learning Center. The pilot project is anticipated to last 1-2 years. **The next MSG**

IMMP Subcommittee meeting will be held on March 21st near Willows at the Sacramento National Wildlife Refuge Complex Headquarters Office.

Reference Watershed Project GIS Database

Chris Keithley informed the MSG that he has used the draft MSG-developed reference watershed list for undisturbed watersheds to develop a GIS geodatabase for delineating the boundaries of the basins. The original reference watershed catalog was developed in 2001-2002 based on input from numerous resource professionals throughout California. Entries were made for both undisturbed and managed watersheds that had detailed fish habitat monitoring information. Due to the scale of the project, a final product has yet to be completed. A subset of that project, limited to undisturbed basins, is being completed with Mr. Keithley's work. It is envisioned that the GIS layer and corresponding database information for reference watersheds will support local watershed groups and government agencies that are conducting watershed assessment and related planning work. **Chris stated, however, that the dataset requires review prior to making it available to the public. MSG participants were asked to provide input on the boundary lines to Chris Keithley (chris.keithley@fire.ca.gov) and/or Pete Cafferata (pete.cafferata@fire.ca.gov). The draft product will be posted on the internet by early April; Pete Cafferata will email the web address out to the MSG email list.** Examples of undisturbed, reference watersheds include Little Lost Man Creek, Upper Prairie Creek, Merced River at Happy Isles, and Big Trees Creek in Calaveras Big Trees State Park.

Swanton Pacific Ranch and Little Creek Watershed Study Overviews

Dr. Brian Dietterick of Cal Poly, San Luis Obispo, provided an overview of the Swanton Pacific Ranch and the Little Creek watershed study. Swanton Pacific covers 3,200 acres near the ocean just north of Davenport on the central coast. Approximately 1,800 acres are forested; 1,200 acres are range lands; and 65 acres are used as croplands. Timber, livestock, and crops are the three main commercial operations found on the ranch. Detailed information on Swanton Pacific can be found at: http://www.spranch.org/.

The Little Creek watershed study (now an MSG Cooperative Instream Monitoring Project) is located on Swanton Pacific and is a long-term study designed to evaluate water quality and channel conditions before, during, and following single tree and small group selection harvests of second-growth redwood and Douglas-fir. The Little Creek watershed covers 1,300 acres and flows into Scotts Creek, which has anadromous fish present. The project will evaluate the effectiveness of the FPRs and special rules for Santa Cruz County in maintaining existing water quality and channel conditions. Pre-treatment data is being collected from 2001 to 2007, treatment will occur in the summer of 2007, and post-treatment measurements will be made through at least 2010. Four water quality monitoring stations are used for a paired and nested study design: upper North Fork (UNF), North Fork (NF), South Fork (SF), and main stem (MS).

Streamflow at the stations is measured in rated sections with constructed side walls, natural stream bottoms, and a sill for grade control (Figure 1). Stage is documented with FW-1 water stage recorders, pressure transducers, flow meters, and staff plates.

Water samples are taken hourly during storm events with ISCO pumping samplers. Turbidity is recorded at 15 minute intervals with YSI Sondes. Water temperature is measured with HOBO Temp dataloggers. Seven rain gauges are located throughout the watershed, with elevations ranging from 80 ft to 1,800 ft.

Dr. Dietterick provided numerous examples of streamflow, sediment yield, and turbidity data collected during storms that occurred on December 29-30, 2003, and January 1-2, 2004 at the Little Creek stations. Instantaneous peak discharges were similar for both storm events, even though considerably more rainfall occurred during the first storm. Peak turbidity during the first storm was approximately 1,000 NTUs, but was only roughly 600 NTUs for the second event, due to seasonal flushing of fine sediment. In general, the plots revealed a high degree of variability in turbidity response. In particular, there is not a very close correlation between turbidity and suspended sediment concentration on an individual storm basis. This may be partly explained by the fact that the NF watershed is largely composed of granitic parent material, while the SF is made up of bedrock producing finer sediment. Past work has shown that continuous recording turbidity measurement works well for estimating sediment yields in watersheds with fine grained sediments, where there is a good relationship between turbidity and SSC, but is less suitable for watersheds with coarse-grained sediment. High correlations ($r^2 = 0.93$) have been found, however, when plotting log values of sediment yields for individual storms for the NF vs. the upper NF.

Numerous other studies are being conducted in the Little Creek watershed, but Dr. Dietterick only had time to briefly mention these projects. Ancillary projects include a LIDAR (Light Detection and Ranging) project that is determining the usefulness of this technique for measuring and detecting morphologic channel changes. LIDAR has allowed accurate mapping of roads and skid trails in the basin. The first LIDAR flight was in 2002 and a second flight is anticipated in the near future. Additionally, a near-stream sediment source study has also been completed and will be repeated for the first time this summer. This survey serves to complement suspended sediment and turbidity monitoring at the four monitoring stations.

Following lunch provided by Dr. Dietterick, the MSG toured the Little Creek watershed, visiting the lower main stem and the NF and SF monitoring stations. Steve Auten provided detailed information regarding past timber sales in the Little Creek watershed, as well as information on road improvement work conducted in the basin. Brian Dietterick and Russ White explained how the monitoring equipment operates at the NF and SF stations (Figures 2, 3, and 4). Cajun James measured turbidity with a portable YSI Sonde turbidimeter probe, with values ranging from approximately 10 to 30 NTUs, several hours after a one inch rainstorm in the NF, SF, and MS.

The BOF, CDF, and MSG would like to express our appreciation to Brian Dietterick and Steve Auten for hosting this MSG meeting, supplying lunch, and providing the excellent field tour of the Little Creek watershed.

Next MSG Meeting

No date was set for the next MSG meeting, but it is anticipated that it will occur in May. A tentative date with alternates will be emailed to the group in the near future.

Figure 1. North Fork Little Creek rated section.

Figure 2. Dr. Brian Dietterick explaining how turbidity is measured at the North Fork station.

Figure 3. Dr. Brain Dietterick explaining how the North Fork monitoring station operates.

Figure 4. The South Fork monitoring station, including the rated section and instrument shelter.